Kansas Medical Assistance Program

Drug Utilization Review Bulletin

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Attention-Deficit/Hyperactivity Disorder: Increasing Prevalence or Overdiagnosis

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Attention-deficit/hyperactivity disorder (ADHD) is among the most prevalent and most controversial chronic health conditions affecting school age children. The basic controversies that surround children and medications and behavioral disorders have been magnified in this instance by the evolution of diagnostic criteria, the changing names of this disorder over time, and the use of controlled substances with abuse potential in its management. The changes in diagnostic criteria have also contributed to variations in reported prevalence rates across time and across regions. Recent years have seen an increase in the prevalence of ADHD (and consequent use of stimulant medications) fueled in part by the 1994 change in the American Psychiatric Association's diagnostic criteria (see Figure 1).[1-3] The point prevalence of ADHD has been reported to range from 1.7 to 17.8%.[2] Data from school-aged community samples indicate a prevalence rate of 8 to 10%.[1,6]

In an attempt to improve consistency, numerous practice guidelines regarding the diagnosis of ADHD have been published in recent years.[1,6-9] Most current recommendations regarding diagnosis suggest a standard history and physical exam to rule out medical causes of complaints followed by an evaluation focused on the DSM-IV criteria for ADHD.[1,6,7] Such an evaluation should include a neurological exam, a parent interview with developmental and family history, an in-depth clinical interview with the child, and information from one or more outside sources (preferably a teacher or other school personnel). It is desirable to have the parents and teacher fill out validated rating scales such as a Connors or Wenders rating scale[8] but only as a part of the evaluation. Continuous Performance Testing (CPT) or Testing of Variables of Attention (TOVA) can also be useful but it is important to remember that there is no one specific test for ADHD; rather a complete diagnostic workup is needed. Specific psychological testing may be indicated in some cases. The key points in any ADHD evaluation are to get comprehensive information from multiple sources and to remember that there is no pathognomonic sign or single tool that makes a definitive diagnosis. In general, clinicians will need 2 and sometimes 3 visits to carry out the evaluation needed.[1]

After accurate diagnosis of ADHD, successful management should include multiple treatment modalities to address the multidimensional nature of the disorder. Parent education, behavior modalities for the child, and school interventions are all important; but stimulant medications have been found to be the superior intervention for the core symptoms of ADHD.[2,7,8,10] Prescriptions for stimulants have been increasing since the early 1990's (see Figure 2). Increases have occurred in both sexes and

Figure 1

DSM-IV Diagnostic Criteria for ADHD (paraphrased)[3]

Symptoms of Inattention [need 6 or more]:

- A lot of people, including his parents, complain that he just doesn't seem to listen when spoken to;
- Because of not sustaining attention, or because of acting like a "space cadet", she doesn't finish her chores or homework;
- He can't keep his mind on what he's doing for very long unless it is very exciting or very entertaining;
- She doesn't pay close attention to what she's doing, so she makes a lot of careless mistakes;
- He's really disorganized, for example, spending three hours to finally finish his homework and then forgetting to take it to school;
- She often loses things necessary for tasks or activities;
- He really tries to avoid doing homework or chores;
- She gets distracted easily, or pays attention to the wrong thing;
- He is often forgetful and has to be reminded to do things frequently.

Symptoms of Hyperactivity-Impulsivity [need 6 or more]

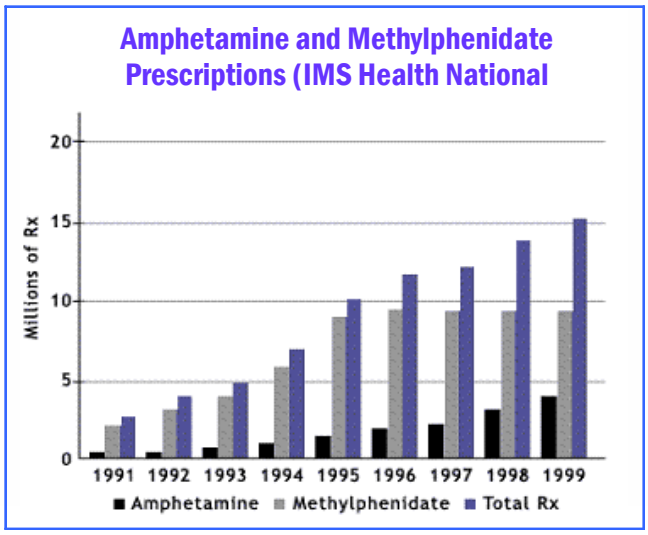
- He often blurts out answers in class, even before the question is completed;
- She can't wait her turn when she is playing games or in class;
- He interrupts others a lot, doesn't let you finish a sentence before he chimes in;
- She has happy hands and feet, she fidgets and squirms a lot;
- He just can't stay in his seat for very long when he's supposed to at school or at dinner or even watching TV, we can't go to the movies;
- She runs around too much and climbs on everything she's not supposed to;
- He is "on the go" as if he is "driven by a motor", tends to do things without thinking about them first;
- She talks too much, she can't keep quiet no matter the consequences;
- He often has problems just playing quietly, "leaves footprints across the ceiling".

Important Notes:

- Must have symptoms for at least six months, be clearly not age appropriate, and they must cause significant problems in ability to get along or be successful;
- At least some symptoms were seen before the age of seven;
- At least some symptoms are seen both at home and at school (two or more places);
- Can have Inattentive Type, Impulsive Type, or Combined (meets criteria for both) Type

across all pre-adult age groups but have been especially prominent in girls.[11,12] This increase in recognition of the disorder in females has been attributed, in part, to the change in DSM-IV diagnostic criteria.[1] The increased use of stimulants has raised concerns about the risks of abuse and diversion and contributed to the controversy surrounding ADHD.[7]

Figure 2



Source: http://www.dea.gov/pubs/cngtest/ct051600.htm [accessed 8/12/05]

Clinical Use of Stimulants

There is overwhelming evidence for the general efficacy of stimulants (over 150 randomized controlled trials with over 5000 children[7]) with 75 to 80+% of children responding to stimulant medications when they are initiated and adjusted appropriately.[6,9,12] Atomoxetine, the only nonstimulant that is FDA-approved for ADHD, and the antidepressant bupropion have also been effective in controlled trials but are considered second line agents due to limited head-to-head comparative data vs. stimulants[9] and uncertainty regarding hepatic injury and sudden death with atomoxetine.[9] Other agents with some documented efficacy (tricyclic antidepressants, clonidine, guanfacine) are of limited utility due to potential toxicity or the need for combination use.[6,9,12]

While the efficacy of stimulants is well established, the decision to use medication in a specific child should be discussed with parents and individualized based on age, severity of symptoms and expected benefits vs. potential risks.[6,12] The choice of a specific agent is empiric as there is no evidence showing any one stimulant to be substantially better than another.[7,9,12] Newer, long-acting preparations of methylphenidate (i.e. Concerta®) and mixed amphetamine salts (i.e. Adderall XR®) are convenient formulations because they cover symptoms throughout the day for most children with a single morning dose. However, they have not been found to have greater efficacy than immediate-release formulations[9] and the advantage of no repeat dose needed while at school comes at increased acquisition cost (see Table 1).

Clinical monitoring of patients on stimulants should be aimed at objectively assessing drug therapy efficacy and treatment-emergent adverse effects.[7,9,12] It starts with detailed baseline documentation and rating of ADHD symptoms with selection of target symptoms and treatment goals. Common treatment-emergent adverse effects of stimulants include decreased appetite, insomnia, headache, stomachache, irritability, and tics. Ongoing monitoring of patients should include vital signs, weight, height, sleep, and eating habits as well as assessment of target symptom improvement. In rare cases behavior may worsen due to anxiety, dysphoria, or even overt psychosis.[7,9] Tolerance to the therapeutic effects of stimulants on the symptoms of ADHD does not seem to develop and studies have demonstrated stable response for as long as 24 months with continued drug therapy.[7,13] Discontinuation of drug may or may not result in reappearance of symptoms, one third to one half of children will have significant symptoms into adulthood.[2,6,7,11]

Monitoring data should include frequency and quantity of medication refills[12] to assess for both adherence and potential abuse. Despite concerns, based in part on increased prescription volume, analysis of annual school surveys of drug use and the Drug Abuse Warning Network data on emergency room visits have not suggested an increase in the abuse or diversion of methylphenidate.[7] In fact, despite cases of reported abuse,[14] the majority of the available evidence indicates that use of prescribed CII stimulants for ADHD does not predispose to subsequent abuse and may actually decrease the prevalence of abuse in appropriately treated children.[15,16] Data available from ACS regarding the Kansas program does not indicate a significant problem with abuse of prescribed CII stimulants in your state compared to other states in the same region`.

Medications in ADHD: Clinical Pearls[2,5,6,8,12,13]
Stimulant medications (either methylphenidate or amphetamines) are considered first-line treatment for ADHD unless there is an active psychotic disorder or history of substance abuse.
When employed sequentially and at adequate doses 80+% of accurately diagnosed ADHD children will show improvement on a stimulant medication.
Appropriate stimulant dose for a given child may be best determined by a “forced titration” trial where several predetermined doses are given for one week at a time to see which produces the best response.
When stimulants are not considered appropriate or are ineffective the alternative with the best supportive research data is atomoxetine followed by bupropion and then the tricyclic antidepressants.
Bupropion and other antidepressants are not FDA-approved for the treatment of ADHD, the only non-stimulant that has an approved indication for this use is atomoxetine.
SSRI’s have shown no evidence of efficacy in ADHD and several trials have had negative results. They may, however, be clinically appropriate in a child with comorbid depression and ADHD.
Combination therapy (such as a stimulant + atomoxetine) is only recommended in treatment guidelines after a child has failed monotherapy with methylphenidate, amphetamine salts, and atomoxetine individually.
The decision to employ “drug holidays” over summer vacation, etc. should be an individual one based on structure and support available but periodic determinations of continued need for drug are appropriate.

Table 1: 2005 Kansas Cost Data – Selected ADHD Medications

Medication	Average Amount Paid per Patient per Month*			
Methylphenidate Immediate Release	5 mg $14.60	10 mg $21.23	20 mg $33.84	
Concerta®	18 mg $77.59	27 mg $70.51	36 mg $83.84	54 mg $78.32
Ritalin LA®	10 mg $72.33	20 mg $73.14	30 mg $74.75	40 mg $76.38
Metadate CD®	10 mg $72.63	20 mg $81.44	30 mg $67.80	
Adderall XR®	5 mg $86.50	10 mg $79.81	20 mg $88.85	30 mg $78.66
Mixed Amphetamine Salts	5 mg $31.36	10 mg $34.05	20 mg $38.23	30 mg $37.02
Strattera®	10 mg $86.05	25 mg $86.83	40 mg $98.95	60 mg $77.54

***** reimbursement is based on one of the following: AWP, SMAC, or Fed MAC

ADHD can have a negative impact on all areas of a child's life. Unfortunately, the old view that it was usually outgrown has proven to be false. While the symptom picture may change, up to 50% of ADHD children will not outgrow it. With appropriate treatment they hopefully will learn to cope and compensate.[6] Multiple interventions are usually indicated and all intervention measures should be aimed at building successes for the child in day-to-day life.

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By federal OBRA '90 statute, State Medicaid agencies are mandated to conduct Retrospective Drug Utilization Review Programs (RDUR). The Kansas Medical Assistance Program operates a DUR program designed to routinely monitor prescription drug use by eligible recipients. The program's goal is to ensure that Medicaid clients receive optimal drug therapy at the lowest reasonable cost. One way to achieve this goal is to identify potential drug therapy conflicts and overutilization, and to encourage prescribers to work closely with their patients to ensure that recipients receive optimal therapy.

Newsletters such as this can contribute to the success of the RDUR program as can the two-way exchange of information. Therefore, If you have questions of comments about the information in this newsletter, please do not hesitate to contact us. Based upon information we provide to you as well as information we receive from you, we are all better equipped to make decisions to address clinically important problems while considering prudent use of taxpayer funds.